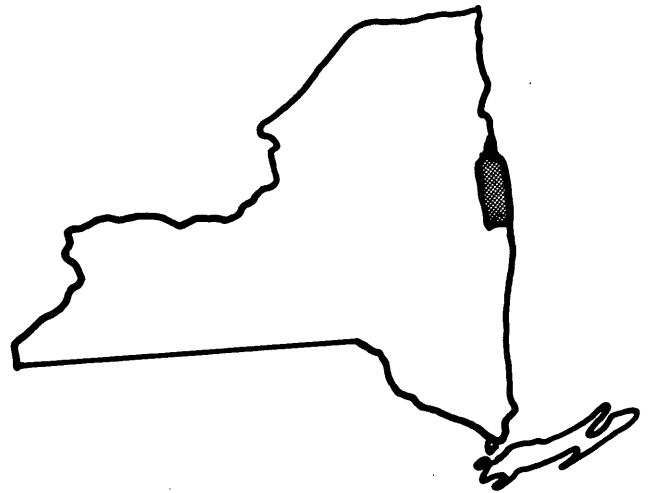


FLOOD INSURANCE STUDY



**TOWN OF WHITEHALL,
NEW YORK
WASHINGTON COUNTY**



JULY 3, 1986



Federal Emergency Management Agency

COMMUNITY NUMBER - 361239

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FLOOD INSURANCE STUDY
TOWN OF WHITEHALL, NEW YORK

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Town of Whitehall, Washington County, New York, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study will be used to allow Whitehall to continue participation in the regular program of flood insurance by the Federal Emergency Management Agency (FEMA). Local and regional planners will use this study in their efforts to promote sound flood plain management.

This Flood Insurance Study was prepared by compiling pertinent information for the flood hazard areas in the Town of Whitehall from existing technical and/or scientific data originally prepared by others for uses other than the preparation of this Flood Insurance Study. This existing data was reviewed by FEMA prior to its use in the development of this Flood Insurance Study to ensure compliance with the National Flood Insurance Program (NFIP) accuracy requirements.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than those on which these federally-supported studies are based. These criteria take precedence over the minimum federal criteria for purposes of regulating development in the flood plain, as set forth in the Code of Federal Regulations at 44 CFR, 60.3. In such cases, however, it shall be understood that the state (or other jurisdictional agency) shall be able to explain these requirements and criteria.

1.2 Authority and Acknowledgements

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by Camp, Dresser & McKee, Environmental Engineers, during preparation of the Flood Insurance Study for the Town of Plattsburgh, New York.

1.3 Coordination

On July 15, 1985, the results of this study were reviewed at a final CCO meeting attended by representatives of FEMA and the Town of Whitehall.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Town of Whitehall, Washington County, New York. The Village of Whitehall was not included in this study. The area of study is shown on the Vicinity Map (Figure 1).

Lake Champlain north of the entrance lock at the Champlain Canal, including South Bay and portions of East Bay, was studied by detailed methods. The areas studied by detailed methods were selected based upon the extent and validity of available existing hydrologic and hydraulic data.

The following flooding sources were studied by approximate methods: portions of East Bay, Mettawee River, Wood Creek, Mud Brook, and the Poultney River. Approximate methods of analysis were used to study all remaining areas having a potential flood hazard that did not have available detailed scientific or technical data.

2.2 Community Description

The Town of Whitehall is located at the southern end of Lake Champlain in western New York. It is bordered by the Town of Dresden, New York, to the northwest; the Town of Fort Ann, New York, to the west; the Town of Granville, New York, to the south; the Town of Hampton, New York, to the east; and the Town of West Haven, Vermont, to the north.

2.3 Principal Flood Problems

A major source of flooding in the Town of Whitehall is Lake Champlain, which is the source of flooding considered in this study. The Mettawee River and Wood Creek drain the central part of the town and empty into the Champlain Barge Canal, which is isolated from Lake Champlain by a system of locks.



FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF WHITEHALL, NY (WASHINGTON CO.)

APPROXIMATE SCALE



VICINITY MAP

FIGURE 1

3.0 ENGINEERING METHODS

For the flooding source studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Analyses were carried out to establish the peak elevation-frequency relationships for the flooding source studied in detail affecting the community.

Flood elevations for this study were taken from Lake Champlain at the Rouses Point gage near Plattsburgh on the western shore. Stages for the lake as determined for that locality were obtained from graphical frequency analyses of gage data using the Flood Insurance Study for the Town of Plattsburgh (Reference 1).

The stillwater elevations for the 10-, 50-, 100-, and 500-year floods have been determined for Lake Champlain and are shown in Table 1.

TABLE 1 - SUMMARY OF STILLWATER ELEVATIONS

<u>FLOODING SOURCE AND LOCATION</u>	<u>ELEVATION (feet)</u>			
	<u>10-YEAR</u>	<u>50-YEAR</u>	<u>100-YEAR</u>	<u>500-YEAR</u>
LAKE CHAMPLAIN				
At Plattsburgh, New York	101.0	101.8	102.0	102.3

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of the flooding source studied in detail were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

All elevations are referenced from the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages state and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study produces maps designed to assist communities in developing flood plain management measures.

4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for flood plain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For Lake Champlain, the boundaries of the 100- and 500-year floods have been delineated using the Flood Insurance Study for the Town of Plattsburgh (Reference 1).

For the areas studied by approximate methods, only the 100-year flood plain boundary has been shown. The approximate boundaries were delineated using the Flood Hazard Boundary Map for Town of Whitehall (Reference 2).

The 100- and 500-year flood plain boundaries are shown on the Flood Insurance Rate Map (Exhibit 1). In cases where the 100- and 500-year flood plain boundaries are close together, only the 100-year flood plain boundary has been shown. Small areas within the flood plain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity, increases the flood heights of streams, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachment in order that the 100-year flood can be carried without substantial increases in flood heights. Minimum standards of the FEMA limit such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced.

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

No floodways have been determined for the flooding sources in this study.

5.0 INSURANCE APPLICATION

To establish actuarial insurance rates, data from the engineering study must be transformed into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors (FHF's), and flood insurance zone designations for the flooding source affecting the Town of Whitehall.

5.1 Reach Determinations

Reaches are defined as sections of flood plain that have relatively the same flood hazard. In lacustrine areas, reaches are limited to the distance for which the 100-year flood elevation does not vary more than 1.0 foot. Using these criteria, one reach was required for the flooding source of Lake Champlain. The location of this reach is shown on the Flood Insurance Rate Map and summarized in Table 2.

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ³ ELEVATION (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Lake Champlain Reach 1	10, 15	-1.0	-0.2	+0.4	010	A2	102

¹Flood Insurance Rate Map Panel

²Weighted Average

³Rounded to the nearest foot - see map

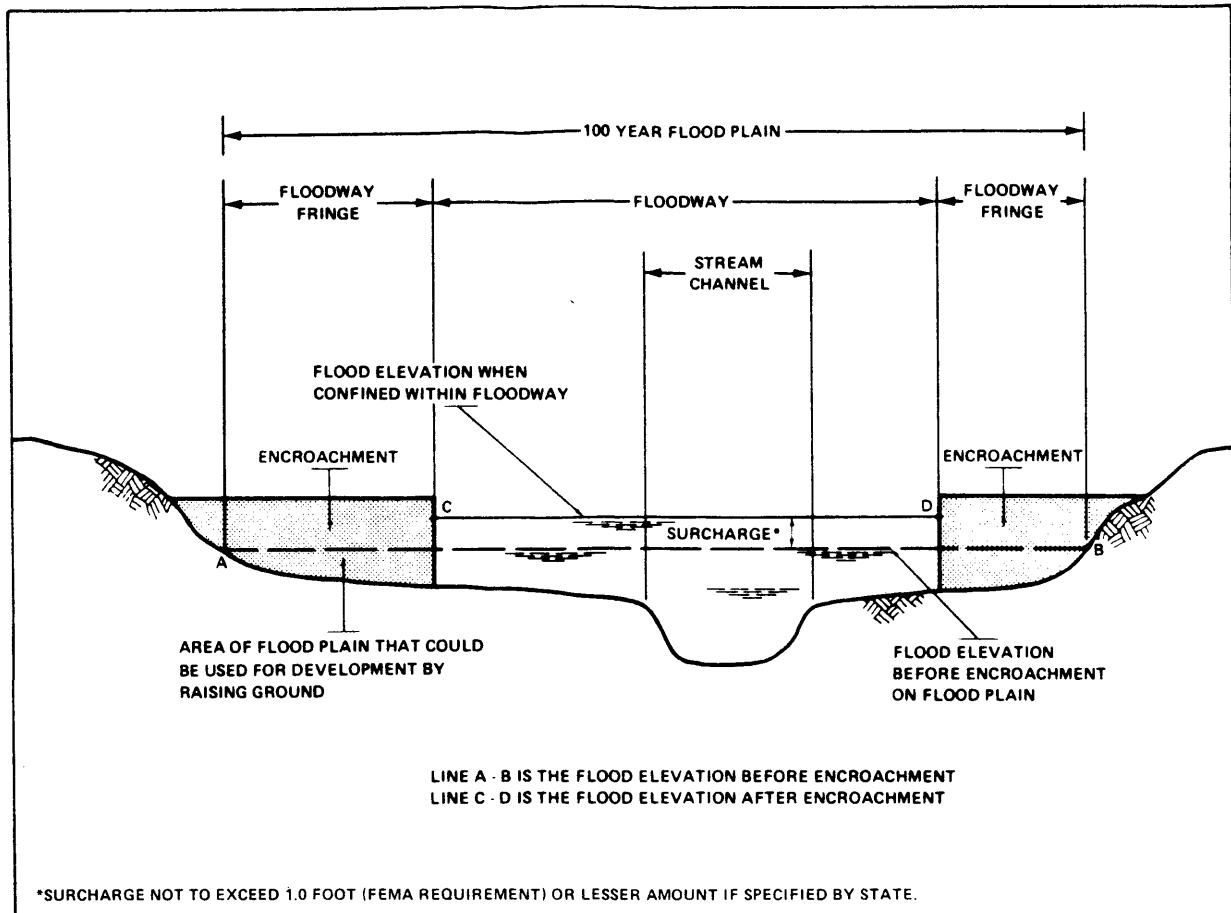
TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD INSURANCE ZONE DATA

TOWN OF WHITEHALL, NY
(WASHINGTON CO.)

LAKE CHAMPLAIN



FLOODWAY SCHEMATIC

Figure 2

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is used to establish relationships between depth and frequency of flooding in any reach. This relationship is then used with depth-damage relationships for various classes of structures to establish actuarial insurance rate tables.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations rounded to the nearest one-half foot, multiplied by 10, and shown as a three-digit code. For

example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year flood water-surface elevations is greater than 10.0 feet, it is rounded to the nearest whole foot.

5.3 Flood Insurance Zones

Flood insurance zones and zone numbers are assigned based on the type of flood hazard and the FHF, respectively. A unique zone number is associated with each possible FHF, and varies from 1 for a FHF of 005 to a maximum of 30 for a FHF of 200 or greater.

- Zone A: Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.
- Zone A2: Special Flood Hazard Areas inundated by the 100-year flood; with base flood elevations shown, and zones subdivided according to FHFs.
- Zone B: Areas between the Special Flood Hazard Areas and the limits of the 500-year flood; areas that are protected from the 100- or 500-year floods by dike, levee, or other water control structure; areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.
- Zone C: Areas of minimal flooding; not subdivided.

Flood elevation differences, FHFs, flood insurance zones, and base flood elevations for the flooding source studied in detail in the community are shown in Table 2.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the Town of Whitehall is, for insurance purposes, the principal result of the Flood Insurance Study. This map contains the official delineation of flood insurance zones and base flood elevations. Base flood elevation lines show the locations of the expected whole-foot water-surface elevation of the base (100-year) flood.

The base flood elevations and zone numbers are used by insurance agents, in conjunction with structure elevations and characteristics, to assign actuarial insurance rates to structures and contents insured under the National Flood Insurance Program.

6.0 OTHER STUDIES

This Flood Insurance Study was prepared by compiling existing hydrologic and hydraulic technical and scientific data prepared by other organizations originally for purposes other than the preparation of this Flood Insurance Study. The data were identified as the best available at the time of compilation of this Flood Insurance Study and should depict the general conditions of the flooding sources with relative accuracy. However, if better information is known to exist or has been developed since the date of this report, the information should be immediately forwarded to the Natural and Technological Hazards Division, Federal Emergency Management Agency, Regional Director, Region II Office, 26 Federal Plaza, Room 1346, New York, New York 10278.

A Flood Insurance Study is currently being prepared for the Town of Dresden (Reference 3). The results of that study will be in complete agreement with the results of this study.

A Flood Hazard Boundary Map has been published for the Town of Whitehall (Reference 2). The differences between the Flood Hazard Boundary Map and this study are justified due to the more detailed nature of this Flood Insurance Study.

This report either supersedes or is compatible with all previous studies published on streams studied in this report and should be considered authoritative for the purposes of the National Flood Insurance Program.

7.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, Federal Emergency Management Agency, Regional Director, Region II Office, 26 Federal Plaza, Room 1347, New York, New York 10278.

8.0 BIBLIOGRAPHY AND REFERENCES

1. Federal Emergency Management Agency, Flood Insurance Study, Town of Plattsburgh, Clinton County, New York, Washington, D. C., September 28, 1979.

2. U. S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, Town of Whitehall, Washington County, New York, December 23, 1977.
3. Federal Emergency Management Agency, Flood Insurance Study, Town of Dresden, Washington County, New York (Unpublished).